

REMOTE SHIFT PROTOCOL FOR FERMILAB NuMI EXPERIMENTS

This document describes agreed upon procedures for certifying remote operation centers for NuMI experiments, and a protocol for communications between remote shift personnel, the primary point of contact, and the MCR.

If modifications to the procedures and/or protocol become desirable, changes to the document can be proposed by contacting Program Planning.

1. INTRODUCTION

In 2012 the viability of running some shifts from certified locations remote to Fermilab was demonstrated for experiments using the NuMI-beam. This demonstration exercised a procedure for establishing certified remote shift locations (Remote Operations Centers – ROCs), defined the preconditions that must be satisfied and a protocol for the communications of the remote shifters with the MCR. In 2013 and beyond it is anticipated that some, and possibly all, NuMI experiments will want to use remote shift locations for at least some of the time. It is desirable that, to the extent that is practical, the remote shift center certification procedures and MCR communication protocol are common to all the NuMI experiments. This document describes the agreed upon procedures and protocol.

2. PRECONDITION FOR REMOTE OPERATION CENTER CERTIFICATION

There must be no ES&H functions provided by on site shift personnel that might be compromised by remote shifts.

3. REMOTE OPERATION CENTER CERTIFICATION

- The institutional principal investigator(s) at the candidate ROC must verify with the experiment spokesperson (or a co-spokesperson) that the institution is ready to become a ROC, i.e. that all required monitoring, control and communication resources are up and running and that all shift functions can be carried out.
- The experiment spokesperson (or a co-spokesperson) must communicate with the

Head of the Operations Department of the Accelerator Division the name and phone number of the new ROC ready to be certified. This must take place at least 24 weekday hours prior to the first time that the new site hosts a remote shift.

- Before the first remote shift is taken, the Head of the Operations Department must (i) notify the MCR that the new ROC is being added to the list of recognized ROCs, and (ii) update the MCR Binder Of Remote Experimental Destinations (the BORED book) with emergency response information.
- The experiment spokesperson (or a co-spokesperson) must make sure contact information for the new ROC is available in the control room.
- To complete the certification, the new ROC must host 24 hours of “shadow shifts” in parallel with “primary shifts” hosted at Fermilab or at an already certified ROC. This is to make sure that all issues have been resolved and hand-off protocols understood. During these shadow shifts, the remote shifter(s) must remain in constant contact via video link with the primary shifter(s) and must perform all operations expected of the shift, including communication with the MCR. The shadow shifts must establish that the remote shifters can adequately fulfill all their responsibilities including, if applicable, DAQ operation and/or monitoring, data quality and/or beam quality monitoring, and logbook and/or checklist entries.

4. COMMUNICATION PROTOCOL

- A ROC shifter will call MCR at the beginning of the shift to state the institution from where he or she is taking the shift. This location will also be added to the name entry in the MCR logbook. A list of ROC phone numbers will be accessible in the MCR so the operators can obtain the number readily.
- The “primary point of contact” for the shift will be the shifter designated by the primary user of the NuMI beamline. In normal operations during 2013 this is expected to be the NOvA experiment. The primary point of contact, whether they are at a ROC or otherwise, must be actively on shift, and when contacting the MCR at the beginning of the shift, must verify that the MCR has the correct phone number to contact them.
- If the shifter is not the “primary point of contact” on the NuMI beamline, at the beginning of the shift they will make contact with the primary point of contact to state the institution from where he or she is taking the shift.
- If there is a problem found with the detector such that the data will not be useful for more than an hour of beam time, MCR must be notified and MCR will determine whether or not to stop delivering beam. The guideline for the MCR is that if at least one experiment can take useful data, the beam should be delivered unless

there are other reasons for shutting it off.

- MCR will not respond to requests to go to the experimental area to reset or monitor anything at the experiment or its local control rooms.
- There will always be experiment experts locally available that can be called to respond to problems. A list of these experts will be maintained locally at each ROC for quick access.
- The ROC shifter must also be able to communicate with the active shifters on the other experiments using the NuMI beam. The spokespeople will ensure that all their ROC's have lists of the possible locations where these other shifters may be, so that in the event that other NuMI experiments are running remote shifts, contacts can be established as needed.
- MCR will normally only contact the "primary point of contact" on the NuMI beamline, regardless of whether that point of contact is on site or is remote. It will be the responsibility of the primary point of contact to communicate messages from MCR to other users of the NuMI beamline. The locations of the other users will be in the MCR E-log since the protocol for notifying MCR of a remote shift is the same for all NuMI experiments, regardless of whether they are the primary point of contact.